Magnetics: Industry Overview *by* Walt Benecki

A Potential North American Source for Rare Earth Oxides

If the stars align well over the next few years, magnet producers in North America and Europe (those who are left) may find themselves a little less dependent on China for their Rare Earth Oxides. Today, roughly 90% of REO required by US industry come from deposits in China. These industries span far beyond rare earth magnet producers. Other major requirements for REO come from glass products, catalytic converters, rechargeable batteries and a range of consumer products such as television screens and DVD players.

Sources estimate that the North American rare earth oxide market exceeds $1 billion annually and is growing. Current US wholesale pricing for separated REO products range from $400 to $3,200 per ton, depending on the type and purity of the final product.

The demand for REO is expected to increase as they begin to play a significant role in emerging alternative energy technologies such as NdFeB magnets in motors and Ni-MH batteries, both required in hybrid vehicles. It is estimated that each hybrid vehicle will contain 20-30 kilograms of rare earths. Looking down the road a bit further, it is expected that REO demand will likely be required for the safe transportation and storage of hydrogen in a post-hydrocarbon economy.

The dependence of the US on Chinese REO has not gone unnoticed in Washington. In July of 2005, Frank Gaffney, president of the Center for Security Policy, appeared before the House Armed Services Committee to testify in opposition to the proposed acquisition of Unocal by The China National Offshore Oil Corporation. Gaffney argued that the proposed purchase of Unocal by the Chinese would further enhance the Chinese desire to "dominate the vital supply of rare earth minerals".

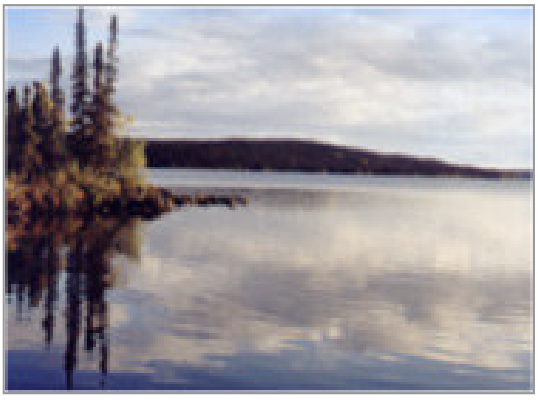
Gaffney pointed out that until 1998, there were essentially two active mines in the world producing rare earths – the PRC's Baotou mine and Molycorp's operation in Mountain Pass, California. Molycorp's ores reportedly contained the highest-grade rare earths in the world. Gaffney noted, "In 1996, the Unocal-owned Molycorp mine was accused by the Bureau of Land Management of running afoul of regulations to protect the desert-tortoise habitat. After paying a series of fines and spending a fortune to jigger its mining so as to accommodate protectors of the desert tortoise, the company that supplied all the US rare earths laid off hundreds of workers and stopped production."

Gaffney also referred to a 2003 *Insight* article that stated, "The PRC acquisition of the rare-earth-magnet technology (Magnequench) was part of a long-term campaign initiated by Deng Xiaoping". The *Insight* article further referenced a 1992 quote from Deng acknowledging the value of the PRC rare-earth reserves in the Baotou region: "There is oil in the Middle East; there is rare earth in China".

Although the Chinese now dominate the world's rare earth production, they face serious safety and environmental issues that reportedly have impacted both production rates and costs. These difficulties, coupled with government influence, and have pushed REO prices upward over the past 18 months.

Now, a potential new kid on the block has emerged as a potential supplier of REO. Great Western Minerals Group Ltd. is a Saskatchewan-based corporation engaged in the acquisition, exploration and development of mining properties hosting strategic, high-value commodities including rare earth elements.

Great Western has been successful in making what is considered a major rare earth discovery at Hoidas Lake, in northern Saskatchewan. The location of this discovery is considered to be of strategic significance to the western world and specifically to North America. According to Great Western, "The next phase of exploration and development work is designed to prove up sufficient ore reserves to commence a full feasibility study and to construct a pilot plant on or near the site to fine tune the milling and separating process." The Company's goal is to achieve production status in as short a time frame as possible.



Hoidas Lake, Saskatchewan, Canada

At the Hoidas Lake rare earth project preliminary drill-testing has now been completed and the project timeline sets completion of the feasibility study and Environmental Impact Assessment for the first half of 2007.

Great Western has recently announced an additional strategic move to permit them to someday leverage the Hoidas Lake project. They have become involved in the specialty metals market related to the production of NiMH powder used in rechargeable NiNH batteries. In December, 2005, Great Western president, Gary Billingsley, announced the acquisition of certain specialty metal production assets located in Troy, Michigan. Billingsley reported that the facilities in Michigan are capable of producing nickel metal hydride powder as well as other specialty metals, powders and super alloys.

Billingsley is forthright regarding Great Western's strategy to focus on the hybrid and alternate energy vehicle market. He has committed Great Western to the goal of becoming a vertically integrated North American supplier of rare earth elements and related value-added products. This suggests a concentration on both battery and magnet applications. It will obviously be a number of years before Great Western proves its capability to compete with the Chinese, but it's nice to know that this possibility exists.

With China currently supplying most of the world demand for REOs and US industry, the world's largest single rare earth consumer, importing the vast majority of their requirements,

Great Western Minerals feels it is uniquely positioned to play a major role, especially in the North American rare earth market. Much of the above information was sourced from a conversation with Mr. Billingsley as well as information on Great Western's website: www.gwmg.ca. The website also contains drill-testing data for those who may be interested.

On a separate note, this author's book entitled *True Fish Stories* is now in print. I'm sorry to say that there are no Hoidas Lake fish stories, but those who wish to learn more about the book can do so at: www.truefishstories.com.

Walt Benecki is the former president of the Magnetic Products Group of SPS Technologies Inc. (now Arnold Magnetic Technologies) and a past president of the Magnetic Materials Producers Association (now International Magnetics Association). Walt is currently president of Walter T. Benecki LLC, a consultancy serving the worldwide magnetics industry. For additional information, visit his website: www.waltbenecki.com.